Human Information Seeking in Architectural Spaces Simulated in Virtual Reality

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Abstract

Previous research has shown that proportions, ornateness, and lighting of indoor architectural spaces affect observers' mental states (Negami & Ellard 2021). However, most studies are limited to verbal self-reports, and focus either on photographs, or CAD-modeled rooms in which certain elements, (e.g. ceiling height), are experimentally manipulated. We study human psychological and physiological responses to historical indoor sites reconstructed in virtual reality (VR). Such spaces are often designed to evoke affective responses – for example, sacred architecture is meant to evoke feelings of calm. Using drone footage, we record 3D geometry, visual and auditory sensory data of an indoor space. We recreate the space in VR, and record humans' eye-movements, heart-rate, galvanic skin response, and reports of affective states, during free exploration. We propose a cognitive model that interprets physiological responses as information-foraging, and identify the correlates of reported changes in affective states with specific properties of architectural space.

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